

Software Defined Multiband EVA Radio, Phase II

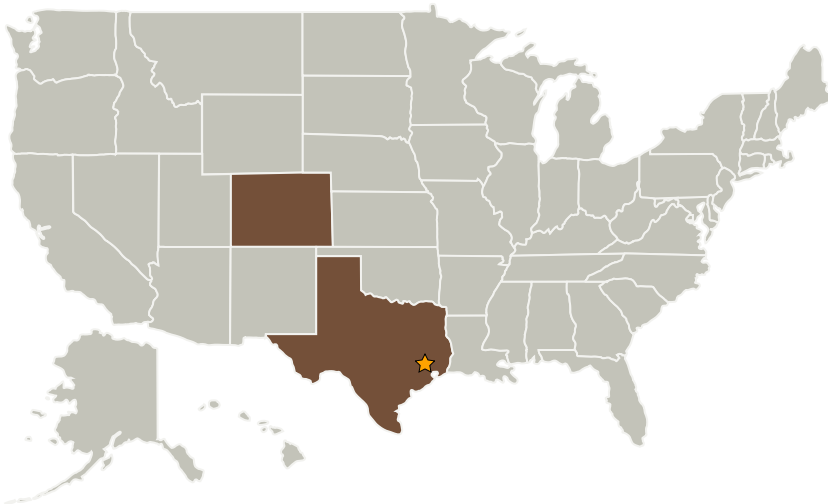
Completed Technology Project (2009 - 2011)



Project Introduction

The objective of Phase 2 is to build a reliable, lightweight, programmable, multi-mode, miniaturized EVA Software Defined Radio (SDR) that supports data telemetry, voice, standard and high-definition video. The proposed radios would be part of an advanced, incrementally expandable wireless network for securing and accessing lunar data assets. For improved reliability and to assure stand-alone functionality, the network would support a real-time 3D location function using site-assisted navigation and utilizing TOA/TDOA methods. To achieve unparalleled power consumption efficiency, Lexycom proposes the use of QoS-aware, data traffic dependent waveform selection. We have estimated that additional reduction in power consumption can be obtained by utilizing cognitive selection of the operating mode of the EVA transceivers. We plan to use an innovative RF packetization technique targeted toward eliminating negotiations between the network nodes prior to the change in the parameters of the transmitted signal on a packet-by-packet basis. We anticipate that after the completion of Phase II, Lexycom will be more than capable of delivering production-ready operational EVA SDR prototypes for further advancements in the transceiver's Technology Readiness Level (TRL). We strongly believe that such radio would facilitate flexibility, provide consistent functionality, and reduce implementation time for future NASA planetary explorations.

Primary U.S. Work Locations and Key Partners



Software Defined Multiband EVA Radio, Phase II

Table of Contents

Project Introduction	1
Primary U.S. Work Locations and Key Partners	1
Organizational Responsibility	1
Project Transitions	2
Project Management	2
Technology Areas	2

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Johnson Space Center (JSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Software Defined Multiband EVA Radio, Phase II

Completed Technology Project (2009 - 2011)



Organizations Performing Work	Role	Type	Location
★ Johnson Space Center(JSC)	Lead Organization	NASA Center	Houston, Texas
Lexycom Technologies, Inc.	Supporting Organization	Industry	Longmont, Colorado

Primary U.S. Work Locations

Colorado	Texas
----------	-------

Project Transitions

**March 2009:** Project Start**September 2011:** Closed out

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
 - └ TX06.2 Extravehicular Activity Systems
 - └ TX06.2.3 Informatics and Decision Support Systems